

# NOTHING BUT THE FACTS

## Uranus data

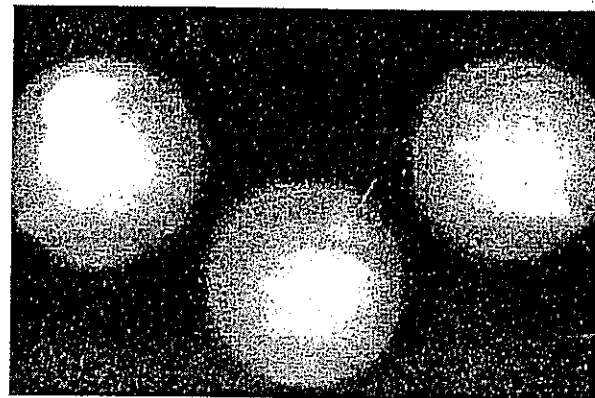
Diameter at equator:	51 200 km
Volume:	67 times Earth's volume
Mass:	15 times Earth's mass
Density:	1.3 times density of water
Gravity at surface:	1.2 times Earth's gravity
Distance from Sun	
average:	2 870 000 000 km
farthest:	3 004 000 000 km
closest:	2 735 000 000 km
Spins on axis in:	17 hours 14 minutes
Circles Sun in:	84 years
Speed in orbit:	24 500 km an hour
Temperature:	-210°C
Moons:	17

## Neptune data

Diameter at equator:	49 500 km
Volume:	57 times Earth's volume
Mass:	17 times Earth's mass
Density:	1.8 times density of water
Gravity at surface:	1.2 times Earth's gravity
Distance from Sun	
average:	4 497 000 000 km
farthest:	4 537 000 000 km
closest:	4 456 000 000 km
Spins on axis in:	16 hours 7 minutes
Circles Sun in:	164.8 years
Speed in orbit:	19 500 km an hour
Temperature:	-210°C
Moons:	8

## Pluto data

Diameter at equator:	2284 km
Volume:	0.002 times Earth's volume
Mass:	0.0005 times Earth's mass
Density:	2 times density of water
Gravity at surface:	0.04 times Earth's gravity
Distance from Sun	
average:	5 900 000 000 km
farthest:	7 375 000 000 km
closest:	4 425 000 000 km
Spins on axis in:	6 days 9 hours
Circles Sun in:	248 years
Speed in orbit:	17 000 km an hour
Temperature:	-220°C
Moons:	1



## URANUS NOTES

### AT FIRST SIGHT

Before William Herschel discovered Uranus in March 1781, the planet had been observed several times as an ordinary 'fixed star', first by the English astronomer John Flamsteed in 1690. Flamsteed had been appointed England's first Astronomer Royal by King Charles II in 1675.

### SWEET DREAMS

The discoverer of Uranus, William Herschel, was also first to spot two of its moons, Titania and

Oberon, in January 1787.

Herschel's son John suggested that the moons of Uranus should be called after characters in Shakespeare plays.

### THE WINKING STARS

On March 10, 1977, some American astronomers were flying over the Indian Ocean in the Kuiper Airborne Observatory, a plane equipped with a powerful telescope. They were planning to watch an occultation (covering up) of a star by Uranus so that they

could work out the planet's diameter accurately. Just before the occultation was due, the star 'winked' five times. Something near Uranus was passing in front of the star. It also 'winked' five times afterwards. Similar 'winks' were also recorded at an observatory on the ground. Astronomers decided that the 'winks' were caused by a set of rings around the planet. In 1986, the Voyager 2 probe took photographs of these rings.

## NEPTUNE NOTES

### BAD LUCK

By September 1845, the English mathematician John Couch Adams had worked out where he thought an eighth planet would be, far beyond Uranus. He sent his calculations to the English astronomer James Challis. Challis did not bother to follow the matter up. If he had looked for the new planet where Adams had suggested, he would have spotted it a year

before its actual discoverer, Johann Galle. Challis eventually started a search in July 1846, but with no great urgency or careful checking. When he heard of Galle's discovery, he rechecked his July observations and found that he had spotted the new planet without realizing it!

### WHAT'S IN A NAME?

The discoverer of the new eighth planet, Johann Galle, suggested the name 'Janus' for it. Jean Leverrier, who had calculated the planet's position at much the same time as Adams, suggested 'Neptune', but changed his mind and suggested 'Leverrier'. But 'Neptune' was more in keeping with the names of other planets and came to be accepted.

## PLUTO NOTES

### TWICE UNLUCKY

In 1919, the American astronomer Milton Humason (who first started work as a donkey-driver) began a search for a ninth planet. Like others, he looked at photographic plates to see if any objects appeared where they should not among the known stars. After Pluto had

been discovered 11 years later, the plates Humason had used were checked. He should have found Pluto on one in 1919, but the image of the planet happened to fall on a flaw in the plate and so was not spotted. And on another plate, Pluto happened to be passing in front of a star!

### NOW YOU SEE IT...

Charon circles round Pluto in exactly the same time that Pluto spins round on its axis. This means that if you lived on one side of the planet, you would always see Charon in the same spot in the sky. But if you lived on the other side, you would never see the moon at all.

*In 2014 is Pluto still known as a planet in our Solar System?*